"Faith, Science and the Future - The African Context"

Report from the Meeting of the WCC Working Committee on Church and Society with a Group of African Scientists

Jos, Nigeria, June 20-27, 1981

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Preface

The Conference on "Faith, Science and the Future - The African Context", was planned as a follow-up in Africa to the 1979 World Conference on Faith, Science and the Future. At its meeting in 1980, the Working Committee on Church and Society had recommended that such regional follow-up conferences be held, especially in developing countries, to encourage discussion and comment on the Conference Report and to promote examination of particular regional and national problems.

The Working Committee later accepted an invitation of Dr B.C.E. Nwosu, its member from Nigeria, to hold its 1981 meeting in his country. It was then decided to use this occasion to invite a group of Nigerian scientists and technologists to discuss the issues of faith, science and society. Eventually a number of scientists and technologists from other African countries were also invited and the AACC through its new General Secretary, Rev. Max Rafransoa, gave its support to the meeting.

After consultation with the National Christian Council of Nigeria it was decided to hold the meeting in the city of Jos, capital of the Plateau State of Northern Nigeria. Twenty scientists, technologists, theologians and church leaders joined the twenty members and staff of the Working Committee on Church and Society for this week long conference, June 20-27, 1981. At the last moment a number of scientists from Nigeria were prevented from coming by strikes in Nigerian universities which prolonged the academic year.

A large part of the meeting was given to presentations and discussion of four issues:

1. Faith and Science in the African Context
2. Science and Technology as Power
3. Energy for Africa
4. Ethical and Social Issues in Science Education.

Four working groups prepared brief reports which were then discussed, amended and approved in plenary session. What follows are the final reports of the Conference which are being forwarded to the All Africa Conference of

Churches and the WCC Central Committee for appropriate action as requested by the meeting.

The members and staff of the Working Committee would like to thank the National Christian Council of Nigeria, and especially Mr J.O. Kolade, the Secretary of its Northern Area Committee in Jos, and also the many churches of Jos for their kindness and hospitality during the days of this meeting. We are also deeply grateful to H.E. Mr Solomon D. Lar, the Governor of the Plateau State, for his memorable address in formally opening the Conference and for the reception which was offered to the members of the Conference by the Plateau State Government. Finally we express appreciation to the Rev. Dr James Downey, Rector of St. Augustine Major Seminary, Jos, for making the seminary available to the Conference, and to the Rev. Dr John Boer, Secretary of the Institute of Church and Society, Northern Area Office, Jos, who though unable to attend the Conference was most helpful in the preparatory stage.

Metropolitan Paulos Gregorios (India)
Moderator of the WCC Working Committee on Church and Society

Dr Paul Abrecht
Director, Sub-unit on Church and Society

Geneva, July 14, 1981

Programme and Time Schedule

Meeting of the WCC Working Committee on Church and Society

Theme: "Faith, Science and the Future - the African Context"

St. Augustine Major Seminary, Jos, Nigeria, June 20-27, 1981

Moderator: Metropolitan Gregorios

Saturday, June 20	Morning and afternoon	Arrival of Participants
	evening	Opening Session and Introductions
Sunday, June 21	Morning	Worship in Local Churches
	11.30	Report on Programme of Church and Society (1980-1981)
	15.30	Plenary Presentations:
		"The Contemporary Debate about Faith, Science and Ideology" by Metropolitan Gregorios
		"Faith and Science in the African Context". Papers by Prof. Anyanwu (Nigeria) and Dr Osore (Kenya)
	evening	Discussion of the Staff Report on Church and Society
Monday, June 22	8.30	Worship: Dr Mugambi (Kenya)
	9.00	"Science and Technology as Power - Dependency and Independency". Presentations by Dr B.C.E. Nwosu (Nigeria) and Mr Ragui Assaad (Egypt)
	10.30	Address by Mr Solomon D. Lar, Governor of the Plateau State
	16.30	Plenary Session:
		"Interpretation of the Energy Crisis in the African Context" by Dr Kayumbo (Tanzania) and Mr Pasztor, Consultant for the WCC Programme on Energy for my Neighbour
	evening	Discussion:
		Church and Society Contribution to the Theme and Issues for Next Assembly and Post-Assembly Programme

Tuesday, June 23	8.30	Worship: Prof. Shinn (USA)
	9.00	Plenary Session:
		"Social and Ethical Problems of Science Education in Africa" by Prof. Ajakaiye (Nigeria), and Reports on the Proposed Science Education Programme by Dr Abrecht and Dr Born (Free University of Amsterdam)
	16.00	Panel Presentations:
		"Search for Technologies Appropriate to Human Development" by Mr Chikamba (Zambia), Dr Garbrah (Ghana) and Dr Nyema Jones (Liberia)
	evening	Reception by the Government of Plateau State
Wednesday, June 24	8.30	Worship: Dr Boluade (Nigeria)
	morning	Working Group Meetings for Discussion and Drafting of the Report
	afternoon	Group Meetings (continued)
	evening	Reception by the Churches of Jos
Thursday, June 25	8.30	Worship: Prof. Dumas (France)
	9.00	Plenary Session: Reports from Working Groups
	afternoon	Excursion
	evening	Plenary Session: Reports from Groups
Friday, June 26	8.30	Worship: Miss Obi (Nigeria)
	9.00	Plenary: Reports from Groups
	noon	Adjournment of Church and Society Business Sessions
	afternoon	Session of Participants from Africa on the Follow-up of the Meeting
Saturday, June 27	morning	Departure of Participants

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Meeting of the

WCC Working Committee on Church and Society

Jos, Nigeria, June 20-27, 1981

Participants

i. Members of the Working Committee:

GREGORIOS, Metropolitan Paulos	Metropolitan of New Delhi, India, and Moderator of the Working Committee on Church and Society
COLEMAN, Prof. John (substitute)	Formerly Head, Mathematics Department, Queen's University, Kingston, Canada
DUMAS, Prof. André	Professeur de Morale et Philosophie, Protestant Theological Faculty, Paris, France
HÜBNER, Prof. Jürgen (substitute)	Scientific Consultant, Protestant Institute for Interdiscplinary Research, Heidelberg, FRG
KIM, Prof. Young Gul	Vice-President and Professor, Korea Advanced Institute of Science, Seoul, S. Korea
KING, Prof. Jonathan (substitute)	Professor of Molecular Biology, MIT, Cambridge, USA
de LANGE, Dr H.M.	Director, University Institute for Value Research and Training, Rotterdam, Netherlands
NASHED, Dr W.N. (Egypt)	Industrial Management Training Adviser, U.N. Development Programme, Riyadh, Saudi Arabia
NWOSU, Dr B.C.E.	Chief Education Officer (Science), Federal Ministry of Education, Lagos, Nigeria
SELLER, Dr Mary	Lecturer in Experimental Biology, Guy's Hospital, London, England
SCHOLZ, Dr Günter	Plant Biochemist, Gatersleben, GDR
SHINN, Prof. Roger	Professor of Social Ethics, Union Theological Seminary, New York, USA

2. Roman Catholic Observer-Participants:

SCHOTTE, Msgr. Jan	Secretary, Pontifical Commission Justice and Peace, Vatican City
VEREB, Fr. Jerome-Michael	Attaché, Secretariat for Promoting Christian Unity, Vatican City

3. Consultants:

BORN, Dr Piet	Faculty of Science, Free University of Amsterdam, Netherlands
JENSEN, The Rev. Dr Ole	Dean of the Cathedral, Maribo, Denmark

4. Participants invited from Africa (outside Nigeria):

CHIKAMBA, Mr C.Y.	Deputy Executive Secretary, National Food and Nutrition Commission, Lusaka, Zambia
GARBRAH, Dr B.W.	Environmental Protection Council, Accra, Ghana
KAYUMBO, Dr H.Y.	National Scientific Research Council, Dar-es-Salaam, Tanzania
MUGAMBI, Rev. Jesse	Department of Religious Studies, University of Nairobi, Kenya
NYEMA JONES, Dr A.E.	National Iron Ore Company, Monrovia, Liberia
OSORE, Dr Harry	Medical School, University of Nairobi, Kenya

5. Participants invited from Nigeria:

AJAKAIYE, Prof. D. Enilo	Department of Physics, Ahmadu Bello University, Zaria
ANYANWU, Prof. K.C.	Department of Philosophy, University of Lagos
BITRUS, Mr D.	General Secretary, Church of Christ in Nigeria, Jos
BOLUADE, Rev. Dr Edwin B.	Lecturer in Religious Studies, University of Jos
CISHAK, Rev. Luther D.	President, Church of Christ in Nigeria, Jos

DANDAURA, The Hon H.	Magistrate, Jos
EZEILO, Mr W.N.O.	Assistant Director, Centre for Applied Religion and Education, Ibadan
GYUSI, Mrs E.	Department of Education, University of Jos
IBRAHAM, Rev. S.	General Secretary, Evangelical Church of West Africa, Jos
KOLADE, Mr J.O.	Secretary, Christian Council of Nigeria, Northern Area Committee, Jos
OBI, Miss Daisy	Director, Institute of Church and Society, Christian Council of Nigeria, Ibadan
OYEKAN, Rev. Dr Joshua	First Baptist Church, Jos
SABIYA, Rev. Wilson	Lutheran Church in Nigeria, Gongola State
SHAMBE, Dr T.	Department of Chemistry, University of Jos

6. Guests:

LAR, H.E. Solomon D.	Governor of Plateau State
ABASHIYA, Dr C.	Governor's Office, Jos
DOWNEY, Rev. Dr J.	Rector, St. Augustine Major Seminary, Jos

7. Staff:

ABRECHT, Dr Paul	Director, Sub-unit on Church and Society
PASZTOR, Mr Janos	Consultant for Programme "Energy for my Neighbour"
STALSCHUS, Miss Christa	Administrative Assistant
ASSAAD, Mr Ragui	Research Assistant

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A. Faith and Science in the African Context

The WCC, on several occasions in recent years, has called together theologians and scientists to study issues of faith and science. It is not our responsibility at this meeting in Jos to repeat or revise all that work. Instead our being here is one response to the urgent plea, made at the 1979 World Conference on Faith, Science and the Future, for regional meetings involving Third World scientists. Our special opportunity is to look at issues of faith and science in the African context. As we meet in Jos, Nigeria we find insights from the African experience that enrich the life and understanding of the ecumenical church. Some themes, often neglected in Christian thought, leap into prominence here. Other ideas, often taken for granted in the West, here require questioning or rethinking. These intercultural conversations are an opportunity for mutual learning and correction. In this context we make certain affirmations and give our attention to certain problems.

Affirmations

1. Faith welcomes science as a precious human capacity to investigate nature. Confident that God is the source of all truth, faith wants accurate knowledge, not error; it wants understanding, not ignorance. Science is a process of discovery; its findings, though tentative and subject to continuous correction, have often achieved a high degree of reliability. Faith has nothing to fear from science. We acknowledge past mistakes of the churches in the rejection of scientific findings, and we reject any theological dogmatism that substitutes itself for honest inquiry into scientific problems. We recognize science with gratitude as a divinely-given possibility for the discovery of knowledge and the transformation of life.

2. Faith is concerned for the wholeness of life. We therefore reject any compartmentalization of life that isolates faith from knowledge, as though faith belonged to the heart and knowledge to the mind. We consider inadequate any religious concern for salvation that is indifferent to scientific contributions to human welfare. Faith and science each has its integrity that should not compromise the other. But as whole human beings we want both. Faith without science runs the danger of superstition. Science without faith runs the danger of manipulation. We cannot isolate sacred and

secular spheres or let either destroy the other. The search to discover the relation between faith and science is an unending search, which must not come to premature conclusion.

Problems

1. Science always operates in a context of culture and values that are not scientific.* The communication of scientific knowledge and processes therefore transmits values and status systems** associated with science but not integral to it. These values and status systems need criticism.

We may here think of two kinds of missionary activity. Christian missionaries, intending to communicate the Gospel, have often obscured that Gospel by confusing it with Western institutions and values. African Christians today have a right and responsibility to criticize those institutions and values in the light of their own experience and their loyalty to the Gospel. Similarly, scientific "missionaries" intending to communicate scientific knowledge and methods, have obscured true science by confusing it with the institutions, prestige systems and economic interest that surround science in Western countries.

Both kinds of missionaries, when they enter a culture they do not understand, may do things destructive of human community. They may destroy people's sense of self-worth. The main objectives of science in Western societies are not the most important objectives for all societies. The models of scientific work in the industrialized countries may, in other settings, misdirect research from the most significant problems to those problems that pay off in

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* Science is here understood as a process of investigation of nature and verification of hypotheses. A different and equally valid understanding of science as a cultural activity would lead to a restatement of some sentences in this section but not to a change in its basic intention.

** By status symbols we mean the complex of institutions, financial incentives, forms of social recognition, publicity and symbols that give recognition to some scientific activities (often large-scale and elaborate) while neglecting others.

money or status elsewhere. The African scientist who is oriented to Western scientific research centres may become alienated from African communities. This problem requires no lessening of scientific zeal; it requires the emancipation of science from particularistic values and institutions that cannot and should not be universalized.

2. Science emphasizes cause-and-effect. Within the whole of experience it tends to concentrate on the uniform, the predictable, the determined, the quantifiable, sometimes the abstract. That kind of inquiry is legitimate, and it has contributed to the enlargement of human understanding. But such an emphasis becomes destructive when it suppresses other aspects of life - the non-predictable, the free and spontaneous, the non-quantifiable, the concrete and unique. It errs when it assumes that technical reason, with its unquestioned abilities, is the whole of reason. It distorts life when it confuses knowledge with wisdom.

The modern world has been fascinated by a "scientific world-view" that dismisses pre-scientific ideas and practices as superstition. There are, in fact, as truly in industrialized as in developing societies, superstitious ways in which natural facts are explained, and science has a role in correcting these. But when that is done, we must still ask what it means to see the world, as African tradition sees it, as a living world, not a dead world of material.

The disenchantment of the world of nature has seemed to be a cultural prerequisite of science and technology. It is almost impossible for these two to operate where the world is still seen to be entirely holy and where nature is conceived as the habitat of benign or demonic forces to be wooed or placated. Yet a rationality that suppresses the wonder and glory of creation is as out of touch with reality as a religion that disdains scientific knowledge.

The issue is especially important for self-concepts. For example, science sometimes studies people as objects and discovers biochemical processes in persons. That study can liberate people from dread diseases. But it becomes misleading if it leads to the conclusion that persons are simply objects and

mechanisms. The African sense of a continuum (nature-persons-God, individual-extended family-community) may be lost to a subject-object relationship and to a manipulative approach to nature, other persons and self. Our problem is to appreciate and use scientific methods without giving them imperialistic authority over all of life.

3. Concentration on new scientific knowledge may suppress valuable traditional knowledge and experience. A major example is biological science and medical practice. The traditional cultures have developed valid and effective methods of treating certain diseases that require attention by modern practitioners. We welcome scientific discoveries that lead, for example, to inoculations against destructive diseases, but we do not want a purely mechanistic medicine that treats only diseases and not persons. We have here in Africa learned of patients who take a turn for the worse when they enter a "modern" hospital. We have learned of others who, after the failure of modern medicine, find help in traditional ways of healing. The tribal medicine man who combines herbal healing, a spiritual approach and psychological persuasion sometimes helps when more mechanistic medical practice fails. Again, the replacement of breast-feeding of infants by "scientifically" designed infant formulas is now widely seen as a mistake, especially in the Third World.

Another example is agricultural practice. Scientific discoveries can increase crop yields, but sometimes their incautious adoption results in mono-cultures that are more vulnerable to disease and bad weather than traditional methods of farming.

The answer is not to persist in old ways and reject new science. It is to appropriate past experience and knowledge while taking advantage of the new.

4. African experience makes us realize the neglect of some important concerns in recent and Western theologies. The dominant theologies have often separated history from nature, concentrating on the former and almost ignoring the latter. They have often focussed attention on eschatology in the form of directing human hope and effort toward a future radically transcending the past and present.

Such theologies have declared liberating messages that are crucially important to humanity in our time. We profoundly appreciate the interest of theology in "the secular", in scientific possibilities, in the ability of God and his human creatures to create a new future.

But if theology emphasizes the future to the erosion of tradition, it may unintentionally legitimate a naïve belief in the benefits of change created by science and technology. African experience is a testimony to the continuing importance of reverence for the sacred in the common life. The churches in Africa sensitize us to the continuities of life, to the steadfast faithfulness of God. They remind us that God's promises are known in the rhythms of nature - "seed time and harvest, cold and heat, summer and winter, day and night" - as well as in the promise of the radically new. They tell us again that God is Creator and Sustainer as well as Transformer of the world.

Recommendation

1. To the Central Committee:

On the basis of our experience here we reaffirm the recommendation of Third World delegates at the 1979 World Conference on Faith, Science and the Future that the WCC arrange further conferences on faith and science in different regions and varying cultural and economic situations. We recommend that such conferences be an important part of the preparations for the 1983 Assembly and that they give a dominant voice to the Third World. We also recommend that they include people knowledgeable in the practice, history and philosophy of science.

2. To the churches in Africa:

From discussions at the 1979 World Conference on Faith, Science and the Future and from further discussions at Jos, it is obvious that issues of faith and science are a most urgent matter in the African context. Many Christians here as elsewhere, are either ignorant of science or consider it a threat to their faith. We therefore recommend to the churches in Africa that they

organize conferences, seminars, symposia and workshops at local, regional, national and continental levels on the issues of faith, science and the future. These conferences should include scientists (natural and social), church leaders and philosophers.

B. Science and Technology as Power

The group reaffirmed the assertion made at the MIT Conference (1979) that science and technology are sources of economic, political and military power. This power is wielded by those who control technological resources over other people, over cultures and over nature.

Several examples illustrating this assertion in the African context were presented. South Africa is able to perpetuate the oppression of its black population through the military power of its modern weapons. Tire manufacturing corporations are able to dictate unfair terms to African governments in their exploitation of rubber plantations due to the economic power they wield by virtue of their monopoly of the tire manufacturing technology. The building of the Akosombo Dam in Ghana and its large-scale deleterious ecological consequences exemplifies the power of technology over nature.

The maldistribution of technological resources among nations and between groups within a given nation creates situations of power imbalances and exploitation. Vertical dependency relationships based on unequal exchange can be maintained between rich and poor countries due to the technological superiority of the former. Within industrialized societies themselves those groups which own and control the technology of production can impose unfair employment conditions on those who don't. The control and extraction of resources which external powers maintain in Third World countries can only be perpetuated by collusion with the local élites who benefit from it. This collusion results in the formation of a technology-intensive and capital-intensive sector which benefits a small proportion of the population which has access to educational and financial resources, while the majority of the population remains in the poor, undeveloped so-called "traditional sector". This confines the benefits derived from educational and manpower training to a group of privileged individuals rather than putting them to the service of society. We, therefore, maintain that the power of local exploiting groups and transnational corporations cannot be dealt with separately since they are mutually sustaining.

An important example of the abuse of the power of technology by élite groups is their use of the mass media. The power of the media can be used to influence consumption patterns in favour of certain economic interests or to manipulate information in an attempt to influence public opinion.

The False Transfer of Technology

For many years governments sought to rectify the technological imbalance between industrialized and developing countries by means of the transfer of technology. The developing countries attempted to do this through bilateral arrangements with other governments or transnational corporations. Frustrated by the above experience these efforts have recently moved to the United Nations where better terms were sought through multilateral negotiations on technology transfer.

It is our view that this process has been and will continue to be a failure because those who have power will not give it up voluntarily. The technologically advanced countries are willing to supply the products of technology as long as they maintain control over its reproduction and development. We maintain that unless the transfer process enables the receiving society to control, reproduce and appropriate the technology such transfer will serve to maintain technological dependence.

Furthermore, we condemn the transfer of obsolete and harmful technological processes including excessively polluting industries and the production of drugs and pesticides which have been banned in the developed countries. This serves only to profit the transferring agencies at the expense of the receiving societies.

We do not know how to implement the above principles in the present world order. We note, however, that the power of technologically advanced groups has not always been used to support exploitation. There are examples of their actions to help liberate oppressed peoples. For example, the role of the industrial North in the American Civil War; Cuba sending trained medical personnel to Angola; the WCC supporting the liberation forces in Zimbabwe; and Scandinavian rural development aid in Tanzania.

Criteria for the Introduction of Technology for Human Development

The group agreed that in order to raise the standard of living in developing countries the benefits derived from science and technology were needed. The introduction of science and technology for human development ought to accord with the following criteria:

1. Science and technology should promote rather than diminish social justice and its aspects of human dignity, freedom and self-reliance. It should also improve the quality of human relations between and within nations. In a situation which is still dominated by injustice (e.g. poverty), technologies should be chosen and assessed in terms of their possible benefits and consequences for the poor and for the groups which have been marginalized by society.

2. Technology should become manageable and maintainable by local personnel and should not create undue dependence on the outside or large-scale profit outflow from the country. Technology should not open a channel for transnational corporations to influence the economic and political goals and choices of the people. The process by which technology is introduced should give opportunities for a substantial participation in decision-making.

3. All technologies should be assessed in terms of how they fit into the social fabric and dynamic of a nation at a given time. A system of comprehensive planning is necessary to make such assessments and also to guide their further development and application. Only in this context of comprehensive planning can the sociological, political, economic and cultural impact be shaped for human benefit.

4. Bigness and smallness, or simplicity and complexity cannot be reduced to absolute principles in assessing the appropriateness of technology. Neither can other categories like labour-intensive, capital-intensive, management-intensive, be made decisive except in relation to the needs of economy of scale, employment opportunity needs, and other economic, social and cultural norms. The technology mix in a country could very well be big and small, labour-intensive and capital-intensive all co-existing.

Strategies for the Churches

Policies enforcing the above criteria can only be brought about through broad social participation and accountability. Production has to be geared toward people and not people toward a production which serves the benefits of the few. In supporting this principle, we must realize that the church will come in confrontation with powerful forces that own and control technological resources. In this confrontation it will have to be on the side of the oppressed to establish justice.

Despite the large social nature of this problem the individual scientist, technologist and decision-maker have a responsibility to implement the above concerns in their own work. The church should support and bring together concerned individuals who can together have more impact on the situation. This should not only be carried out within congregations but also between different groupings and denominations. Appropriate social institutions will be needed to bring about the necessary conditions for the use of science and technology for human development. Where such institutions exist, the church should provide moral and logistical support, and where they are lacking it should work actively for their creation.

A successful example of the social process by which a technology is introduced in the African context is the process which goes on in the Ujamaa village system in Tanzania. First a need is perceived, such as the lack of drinking water. The villagers get together to discuss the situation with an extension agent. Taking into account local resources in materials and manpower a solution is proposed. The technology is not introduced unless the villagers perceive a need for it and are thus willing to finance it and maintain it by means of local resources. If a pump is to be introduced, for instance, the local mechanic, with appropriate training, should be able to service it. This process capitalizes on the cooperation made possible by the African extended family system in addition to an adequate institutional support from the local or national authority.

In the African context, the All Africa Conference of Churches (AACC) has a particular role to play in bringing these social issues relating to science and technology into its activities. We call upon the various African member churches to bring these concerns to the AACC and to their congregations.

Recommendations:

1. We call upon the Central Committee of the WCC to use the occasion of the 1983 Assembly to reaffirm that the above concerns on science, technology and society are an essential area of church activity. This includes the pastoral responsibility of churches to their members in addition to social action on the side of the victims of the misuse of technological power.

2. We recommend that the technologies of food production, processing and distribution in their impact on the Third World need continuous study and action specifically with regards to the fulfilment of basic human needs in the context of a Just, Participatory and Sustainable Society. With this in mind we propose that the WCC commissions and sub-units on Inter-Church Aid (CICARWS), Peoples' Participation in Development (CCPD) and Church and Society jointly sponsor several pilot projects in areas suffering from food shortages to see how new and appropriate food production technologies might be introduced to meet human need.

3. We suggest that the churches in Africa and the AACC set up a working committee to continue these discussions with African scientists, technologists and decision-makers.

4. We encourage the churches in Africa to make more information available about science and technology and the social/ethical implications of their use in church publications, other mass media and through public events.

C. Energy for Africa

I. The Energy Situation in Africa

In Africa, as in other developing regions, there exists a dual energy crisis. The one, which is discussed most in international circles, is the crisis resulting from the large increases in the price of petroleum. This is placing tremendous strains on the economies of the oil importing countries.

The "other" energy crisis - in our view a much more important one - concerns about 85% of the African population, the people living in the rural areas. Most of these people live under very poor conditions. They are unable to improve upon them due to the lack of energy, or the lack of socio-political institutions which could help them in securing larger supplies of energy.

Presently, they are using wood and charcoal to satisfy most of their energy needs. The utilization of human and animal energy is also very important in Africa. Their more efficient utilization could provide unfilled needs. In order to improve living conditions, it is essential to provide increasing quantities of energy for the following activities:

- agricultural methods to increase productivity
- cottage industries
- communications and transportation
- health and nutrition.

Population and Energy

There has been a tremendous increase in population in the last two decades in Africa. Some countries, such as Kenya have now population growth-rates which are approaching 4%. This is not primarily due to more births as such, but to lower infant mortality, due to improved medical care and supply of clean water. This problem is compounded by the fact that the people are also living longer.

Such large population increases are now placing tremendous strains on all natural resources, such as food, water and energy. In so far as energy

is concerned, the biggest problem is the lack of firewood. Large areas have already been deforested, and this trend is increasing. For the long term, there is need therefore for substantial reafforestation programmes to reverse this trend.

Big increases in the supply of energy will be needed just to keep the situation from deteriorating, and even larger increases will be necessary in the future if one wants to improve upon the present situation. The long-run outlook is not without hope. The African continent has a tremendous and yet untapped potential for hydroelectricity. In most countries, there is also a promising future for biogas and for other indirect forms of solar energy. However, one should not underestimate the difficulties of exploiting these different energy options.

Appropriate Energy Technologies

It is impossible to state in a general way which energy technologies would be appropriate for the development of Africa and which would not. We cannot say that it is only small, decentralized or large centralized energy technologies which are needed. This has to be decided according to the specific context. However, there is general agreement that those technologies should be supported which will be useful, i.e. appropriate, to the rural poor. We are also aware of the fact that the socio-political situation in which a technology is applied determines to a great extent whether that technology can be employed in a useful way by the poor.

In fact, the technologies by themselves will certainly not be enough. What is needed is "comprehensive development" for each nation/region which includes energy development, as an integral, but only one part of a multi-dimensional development plan. It is very important that African governments commit themselves politically to such comprehensive plans, in order to improve the lives of their peoples. Looking at only one dimension of development, such as energy by itself, can lead to serious mistakes. This is what happened in Egypt, as a result of the construction of the Aswan Dam. The original aim was to produce huge amounts of electricity. This has been done, but at a

tremendous cost. The already very fragile ecological balance of the Nile Valley was completely disturbed - and is in the process of being destroyed - as a result of the dam.

Electrification can fill an important need, but the question is, how is it done, who gets the electricity, and at what price? Transmission of electricity from large centralized sources is very expensive and often prohibitively costly for remote areas. In such cases decentralized energy sources, such as mini-hydro and wind-mills might do the job better.

Often the electricity prices are subsidized, supposedly so that the poor can also pay for it. Actually, what happens is that the rich are subsidized since it is only they who have the means to use the electricity.

Supplying energy is not enough. People must be encouraged to use energy for constructive purposes in agriculture, cottage industries, etc. The comprehensive plans should include provisions for not only how the energy is produced, but also how it is used. In the Kilimanjaro region of Tanzania such a comprehensive plan was worked out successfully. If other regions and nations in Africa followed such a plan that would provide a basis for an "African Regional Energy and Development Plan" as asked for by the OAU in the Lagos Plan of Action of 1980. Some African countries have huge energy potentials, while others do not. For this reason, inter-African energy cooperation should be pursued by the national governments as well as by the OAU.

We cannot emphasize strongly enough: the top priority is the improvement of the living conditions for the poor. Decisions about energy are finally political and economic decisions and in our view they must reckon with the needs of the poor. This means an explicit commitment to their cause, by governments, by churches and by individuals.

II. Nuclear Energy in Africa

We considered the action of the WCC Central Committee (August 1980) in favour of a moratorium on nuclear energy.

At present, and given the economic and technological situation in Africa, our countries should endeavour to develop local sources of energy rather than committing themselves to complex and expensive technologies such as nuclear energy, which in fact only furthers their dependence on highly industrialized countries. There are however some countries where nuclear energy might already be the only viable option for large-scale generation of electricity. For others, it might be only a future option. In any case, the training of nuclear engineers and technicians should continue.

In view of the fact that South Africa has already acquired nuclear technology, it is politically unacceptable, for some African countries, not to go ahead with their own development of nuclear technology.

We are therefore of the view that in Africa, a universal moratorium on nuclear energy would be unfair and unrealistic.

III. The Energy for my Neighbour Programme

We have received with interest a report on the energy crisis in the developing countries prepared by the staff for the WCC programme, "Energy for my Neighbour" (ENP). By the end of 1981, the Enquiry will have launched programmes in Asia and Latin America. We urge that the Enquiry be extended to Africa in the first half of 1982.

There is need to continue this WCC programme after the completion of this present stage. The churches are just beginning to see that they have a large responsibility in this area and the momentum should be kept going. The way we produce and utilize energy has a very important impact on the ways we perceive life in our societies. At a time when the WCC is preparing for an Assembly on the theme, "Jesus Christ, the Life of the World", this enquiry on energy could contribute significantly to the discussion of an important means of improving and sustaining life.

The churches are in close contact with many sections of our societies and in a position to discuss and to help solve the social and ethical problems of the energy crisis. WCC member churches could contribute to the discussion of

energy issues and help practically in energy development in the following ways:

1. by researching and spreading information to their church members and to the public in general about the critical ethical and social issues;

2. by getting involved in energy related development projects, which they by themselves or secular agencies, governments, groups or individuals have initiated;

3. by contributing money as well as know-how to practical projects which will serve the neediest;

4. by helping either through their own teaching institutions or by supporting other training centres to provide the technical know-how to people, especially to the poor, so that they may become more self-reliant for their energy needs in all countries;

5. by stressing to their members and to the public at large the need for conservation and for more efficient and ethical management of energy resources;

6. by channelling money, through the churches or the ENP to the Inter-Church Aid agencies, earmarked specifically for energy related projects. These funds could be collected as a result of conservation efforts by church members and congregations;

7. by emphasizing the need for those who presently use too much energy to change to less energy-intensive life styles;

8. by encouraging inter-denominational and inter-faith approaches to such work.

Some churches are already doing good work but they are still too few. The WCC Energy Programme offers help to churches seeking to enlarge their ecumenical ministry to society.

The ENP also plays an important coordinating role between the different regions of the globe, seeking to:

1. accumulate and distribute information concerning the ethical, social, political as well as technical aspects of the energy crisis in North, South, East and West (see Anticipation, no. 28);

2. support financially and organizationally the exchange of those concerned about appropriate energy policies and to help promote better understanding of energy problems facing different peoples. (But any such programme must be carefully planned lest it result in the rich spending more money and energy on their own travel instead of on redistribution that will help the poor;)

3. provide information and technical advice about worthwhile projects to the large funding agencies in the rich countries. (The ENP should emphasize to these agencies the importance of the three basic needs, food, energy and water, and the relationship between them.)

Such an exchange of visits and information has helped to promote better understanding of the energy crisis, and to see more clearly the inter-relationships between regions and continents.

IV. Recommendations

1. We request the WCC to

- continue the mandate of the ENP, at least through 1982, in order that the next Assembly shall be able to address these issues realistically and comprehensively;

- urge all member churches to see the possibility of a witness in the discussion of energy policies;

- commit themselves in support of programmes of energy development which favour the poor.

2. We recommend that the AACC

- support the activities of the ENP in Africa, by setting up a regional energy group, to coordinate the work of national groups;

- use all possible means to make known to the respective government bodies in Africa, as well as to the OAU the concerns of the churches in Africa about the energy crisis.

D. Ethical and Social Issues in Science Education

Preamble

In all developing countries there is an insatiable thirst for science education which is considered to be essential for the economic progress of society.

Unfortunately, in all countries of the world the majority of the people, including those in authority, have little understanding of the ethical and cultural dimensions of the impact of science and technology on their total well-being.

Everywhere, science education seems to have as its sole aim, the provision of "tools of the trade" to the future scientist or engineer. Both to them and to the general public are provided only isolated fragments of information about the social implications of transforming society rapidly by the sudden introduction of high technology.

The MIT Conference on Faith, Science and the Future (July 1979) and the Church and Society follow-up meeting in Stuttgart (June 1980) emphasized that this issue needs urgent attention.

The sub-unit on Church and Society of the WCC calls upon the member churches of the Council, on teachers in schools and universities, on priests and ministers, and on all persons in authority in government to inform themselves on the above issues and to actively support the recommendations below.

In our deliberations we made the following observations concerning Science Education:

1. That there is a growing need and interest all over the world, for open discussions on the relationship between Faith, Science, Technology and other disciplines.

2. That very often the curriculum in most educational institutions is organized in such a way that there is little or no interaction between the natural and social sciences. Nor has sufficient attention been devoted to

the possible contribution of science and technology in the struggle to bring about a just, participatory and sustainable society.

3. That especially in Africa, teacher training does not adequately prepare the trainees to deal with the apparent conflicts arising between science education and religious education as they relate to religious and cultural backgrounds.

4. That most churches have hitherto not directed their attention to the ethical and social implications of scientific and technological innovation. It is becoming imperative for the churches to treat this issue as a matter of priority.

5. That scientists have not paid sufficient attention to the social and ethical implications of their work.

Recommendations:

A. Churches in Africa

In view of the observations made above, we recommend that local churches:

1. incorporate science education in the curriculum of their theological colleges and seminaries, especially with regard to the ethical and social implications of scientific and technological innovations in their countries.

2. Raise the awareness of their people about the social and ethical implications of technological options through special courses in lay training centres, pastoral institutes, university departments of religious studies (where possible), and other related institutions.

3. Organize pastors' seminars to be addressed by philosophers, natural and social scientists on the nature and implications of scientific and technological options accepted, or under consideration, in their countries.

4. Cooperate with professional organizations like theological associations, scientific associations, science teachers' associations, religious education teachers, etc. in order to discuss the relevance of the science education curricula currently used in their countries.

5. Where possible, encourage the theological education by extension programmes to incorporate discussion on scientific and technological problems in the curriculum; and actively promote participation in these programmes.

6. Urge the governments in their countries to organize programmes of cultural orientation for expatriate teachers of science education, so that those teachers may be better equipped to relate science education to the cultural context of the students in particular and the people in general.

7. Encourage parents to discuss openly with their children, on scientific questions which arise from science and religion, lessons in school, in order to promote an open and healthy attitude towards religion and science.

8. Encourage science professors to relate their teaching to social and ethical concerns.

9. In cooperation with departments of religious studies, science and engineering, the churches are urged to promote public discussions in the universities and other institutions, in order to raise awareness of social and ethical concerns at the institutions of higher learning.

10. Ideally, education in institutions of higher learning should be inter-disciplinary, so that every student can study courses in both science and arts. Churches are urged to press for a university curriculum which makes his inter-disciplinary approach possible.

B. Churches in Industrially Developed Countries

In view of

(i) the observations made above
(ii) the recommendations to the churches in Africa
(iii) the fact that about 50% of scientific research is devoted to armaments
(iv) the fact that about half a million scientists are employed by transnational corporations whose sole aim is profit,

we recommend that churches in industrially developed countries :

1. organize and promote discussions on the social and ethical implications of science and technology at the local and global scales, especially with reference to the impact of investments in high technology which are aimed to benefit Europe and North America at the expense of the countries of Africa, Asia and Latin America.

2. Support financially the projects both at home and in Africa, Asia and Latin America aimed at eliminating exploitation both at the economic and educational levels. For example, projects which conscientize people to invest in relevant and appropriate technology.

3. Encourage Christians to critically review their participation in scientific and technological involvements which bring about injustice, especially to the peoples of Africa, Asia and Latin America.

C. The World Council of Churches

In view of the observations made above and the recommendations to the local churches, in Africa as well as those in Europe and North America, we recommend the following:

1. We endorse the recommendations made to the WCC at the MIT Conference on Faith, Science and the Future (1979), concerning science education. (Ref.

Faith and Science in an Unjust World, Vol. 2, pp. 39-48; also Anticipation, no. 28, December 1980, pp. 59-60)

2. In particular, we recommend that the WCC take action on the following issues:

a. Continuing Science Education:

That the WCC continue to arouse, as widely as possible, awareness of the implications of new scientific knowledge and those technological innovations which promote justice in the world in general, and in the Third World in particular.

b. Building Awareness:

(i) That the WCC identify sources of funding to support the efforts of awareness-building especially in Africa, with emphasis on the educational institutions both secular and theological.

(ii) We note that in Africa the majority of the population is under 21 years of age, and therefore more emphasis should be placed on the schools, colleges and universities.

c. Inter-Disciplinary Discussion on the Ethical Implications of Scientific and Technological Innovations:

(i) That the WCC support projects which promote positive interaction between the professional associations of natural and social sciences, technology, philosophy and theology in order to enhance the social relevance of their involvement.

(ii) That the WCC initiate further discussions on Faith and Science among its members, and also with those churches that are not within the WCC.

d. Communication of Science Education through the Mass Media

We re-affirm the concern expressed at the Church and Society meeting (Stuttgart 1980) with regard to the role of the mass media in science education. (Faith, Science and the Future: A Look Forward, June 1980, Recommendation XVII, Anticipation, no. 28, December 1980, p. 59)

"It is important that such communication be extended to mass audiences in all countries so that a careful and sensitive handling of scientific and ethical issues may be introduced into popular television and radio programmes."

Through the WCC Communications Department, this concern should be pursued.

e. Introduction of Ethics into Science Education Curriculum

That the WCC, in cooperation with the Free University of Amsterdam create a consortium of educational institutions of various religious and cultural backgrounds to develop written material bearing on the ethical, cultural and social dimensions of science suitable for widespread distribution (for details see Appendix, page 34).

f. The Role of Students and Women

(i) That in all projects designed to meet the recommendations made above, the WCC and the churches should ensure the active participation of students and women, considering that these groups constitute a majority of the world's population.

(ii) That the WCC and the churches organize panels of lay scientists who are open-minded, to discuss with students on the ethical and social implications of scientific and technological innovations in their countries.

(iii) That as much as possible the WCC and the churches should work in co-operation with the academic departments in the institutions of higher learning, in order to facilitate the integration of these issues into the general education of these institutions.

Appendix - Consortium and Ecumenical Seminar on Science Education

We recommend that

1. a consortium of educational institutions and interested groups of various religious and cultural backgrounds be created to develop written material bearing on the ethical, cultural and social dimensions of science and suitable for use as: (i) curriculum material for courses of varying length in universities, colleges and secondary schools, (ii) study pamphlets for use in discussion in universities, training colleges, labour unions and religious groups, (iii) lesson material for incorporation in programmes of religious, moral or civic education in schools.

2. The consortium consist of eight or ten institutions, equally distributed between industrialized and non-industrialized countries, in Europe, North America, Africa, Asia and South America.

3. A Seminar, involving three to five persons from each of the members of the consortium be held in the Fall of 1982 (or Spring of 1983) for about ten days, to criticize and rewrite material drafted by working groups to be established as soon as possible in the member institutions.

4. The Free University of Amsterdam (FUA), in collaboration with the sub-unit on Church and Society of the WCC and other concerned sub-units, be asked to assume administrative responsibility for the project (which arises naturally from the FUA Congress on Science in 1980) until the Seminar.

5. The project should be initiated at a preliminary meeting (November-December 1981) of representatives of the FUA and the WCC.

6. The FUA be asked to provide central office services and the cost of hosting the Seminar and the preliminary meeting, and that travel expenses be found by the participating institutions and the WCC.

7. Time be provided during the Seminar for discussion of (i) continuation of the project, (ii) final editing and distribution of any material produced, (iii) what further material are needed or desirable, (iv) recommendation to the Assembly of the WCC.